

Sookpichaya Charrunchon 2013: Growth Pattern of Yeast Cells Studied Under Line Optical Tweezers. Master of Science (Physics), Major Field: Physics, Department of Physics. Thesis Advisor: Miss Nattaporn Chattham, Ph.D. 82 pages.

Cell growth and division has been of scientists' interest for over generations. Several mathematical models have been reported derived from conventional method of cell culture. Here we applied optical tweezers, a powerful tool for manipulating microscopic objects using tightly focused beam through a high numerical aperture microscope objective, to guide cell division directionally. Thus far, the use of infrared light under optical tweezers have proven to be an ideal tool for studying biological system with less optical damage to living cells.

The patterns of *Saccharomyces Bayanus* yeast growth was studied under 1064 nm line optical tweezers generated by time-shared multiple optical traps. Yeast growth was found following the path of the various generated laser patterns in linear, circular, square and L shapes, speculatively as a result of localized heating effect due to absorption at the focal point.

The area of grown yeast cells was measured through image processing procedure and plotted as a function of time. Mathematical model for the growth rate under line optical trap has also been determined and discussed.

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Thesis Advisor's signature

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